

### III. RESEARCH METHODS

#### 3.1 Research Design

This research is a quantitative study which has *one group pretest-posttest design*. The research selects one class as the experimental group using simple probability sampling. The aim of this research was to find out whether there was significant different of students' vocabulary achievement by implementing word association at the first grade of SMP Negeri 1 Pugung Tanggamus.

#### T1 X T2

T1 = Pretest

X = Treatment

T2 = Posttest

(Setiyadi, 2006:133)

#### 3.2 Subject of the Research

The subjects of this research are the students at the first grade of SMP Negeri 1 Pugung Tanggamus. There are five classes of the first grade of SMP Negeri 1 Pugung Tanggamus. Each class consists of 38-42. In relation to the design, the

research takes one classes as the research as the experimental class of the research.

### **3.3 Variables**

The research consists of the following variables:

1. Vocabulary as dependent variable (Y). It means that the student's vocabulary achievement depends on their ability in memorizing and using a number of English words in language.
2. Word Association Technique as independent variable (X). It means that Word Association Technique doesn't depend on anything.

### **3.4 Data Collecting Technique**

The data of the research is the student` vocabulary achievement before and after the treatments.

The instrument of the research was multiple choice tests, where the researcher gave pretest and posttest in order to evaluate, to measure the vocabulary achievement.

In collecting Data, this research used the following procedures:

#### **1. Pretest**

The pretest was conducted before treatments. It was used to how far the students have mastered the vocabulary before treatment the treatments were given. The pretest used by researcher was multiple choices. The number of item in the test 60

items and each item has four options of answers. One was the correct answer and the rests were the distracter.

## **2. Posttest**

The posttest was conducted after the researcher conducted the treatments. It was used to know how the students' improvement of vocabulary after they were given treatments. Similar to the pretest, in the posttest the researcher used of multiple choices. The questions were the same as the pretest. But, the researcher changed the order of the questions and the distracters from those in the pretest in order that the students not only memorize or remember the order of the answer for each question but they could really understand the questions. The posttests consist of 40 items with four options. One was the correct answer and the rest were the distracter.

### **3.5 Steps in Collecting Data**

1. Determining the subjects of the research

The subject of the research was selected using simple probability sampling, which was by using lottery. The subjects of the research follow pretest, treatment, and posttest. There were 42 students that become the subject of this research.

2. Selecting instrument materials.

In this research, there was one pretest that was proper to the first grade of SMP. The topic was "occupation". The materials took from students' handbook that was based on the educational unit level curriculum.

3. Conducting try out.

The try out conducted in the different class at first class of SMP Negeri 1 Pugung Tanggamus. Try out was conducted to measure the reliability of pretest and posttest. It was administered for 60 items in 90 minutes. The aim of try out was to know the quality of the test which used as the instrument of the research, and determine which item should be revised for the pretest and posttest. This research used the result of the try out test to measure the level of difficulty and discrimination power, to find out the validity and reliability.

4. Conducting the pre test.

Pretest was conducted for 40 items in 60 minutes to measure student's basic ability.

5. Conducting the treatment.

After giving pre test, the students were given three treatments by using Word Association Technique based on the lesson plan which has been prepared. Each treatment is held for 90 minutes.

6. Administering post test.

The post test was administered after the application of Word Association Technique. It was conducted for 40 items in 60 minutes and the aim was to find out the students' vocabulary achievement after the implementation of Word Association Technique

7. Analyzing the data.

After doing all procedures, the researcher calculated the percentage between the pretest and posttest, In order to know whether Word Association Technique can be use to increase the students' vocabulary achievement significantly.

### **3.6 Instrument of the Research**

The instrument was held for pretest and posttest. Pretest was given before the treatment in order to know how far the students` competence in vocabulary and posttest was given after presenting the treatment in order to know the improvement of students` vocabulary. Then, the researcher found out whether there was different increase on the result between pretest and posttest.

### **3.7 Criteria Try out**

In this research, to prove whether the test has good quality, it must be tried out first. The test can be said have good quality if it is has a good validity, reliability, level of difficulty, and discrimination power.

#### **3.7.1. Validity**

The test could be said valid if the test measures the object to be measured and it is suitable with the criteria (Hatch and Farhady, 1982:250). To measure whether the test has a good validity, this research used content and construct validity.

- a. Content validity is concerned with whether the test is sufficiently representative and comprehensive for the test. In the content validity, the material given is suitable with the curriculum. The researcher used the vocabulary that is supposed to be comprehended by grade VII students. In this research, the researcher arranged the instrument based the material that already given, which is vocabulary and the instruments related to the content words (noun and verb). Content validity also can be examined from the table

of specification. The table presents the material that the researcher applied the test. The content validity was constructed by including vocabulary material in the training they were noun and verb of vocabulary. The content of try out test is presented in the table of specification below:

Table 1. Table of specification of try out test

No	Word classes	Percent	Number	Item numbers
1	Noun	52%	31	1,4,7,8,10,12,13,14,15,19,21,23,24,25,26,27,28,30,31,32,33,34,36,38,40,41,47,48,49,51,52,54,
2	Verb	32%	19	3,5,8,17,18,35,37,39,42,43,44,45,46,53,56,57,58,59,60.1
3	Adjective	16%	10	2,5,6,9,11,16,18,20,22,29,
	Amount	100%	60	

#### b. Construct Validity

Construct validity is concerned to know the certain language knowledge skill. To know the test was true reflection of language which was being measured, the writer would examine whether the test question actually reflect what is meant to know a language. To get the construct validity, the test was adopted from student's hand book. Then, the test determined according to the material that was taught to the students. In other words, the writer wrote and made the test based on the material in the 2006 English curriculum for Junior High School.

### 3.7.2. Reliability

Reliability of test can be defined as the extent to which a test produces consistent result when administrated under similar conditions (Hatch and Farhady, 1982:243). To estimate the reliability of the test this research used split-half technique. To measure the coefficient of the reliability between odd and even group, this research used the person product moment formula as follows:

$$r = \frac{\sum XY - \frac{(\sum x)(\sum y)}{n}}{\sqrt{\left[ \sum x^2 - \frac{(\sum x)^2}{n} \right] \left[ \sum y^2 - \frac{(\sum y)^2}{n} \right]}}$$

Where:

$r$  : coefficient of reliability between odd numbers and even numbers items

$x$  : total numbers of odd numbers items

$y$  : total numbers of even numbers items

$n$  : numbers of students who take part in the test

$x^2$  : square of  $x$

$y^2$  : square of  $y$

$\sum x$  : Total score of odd number items

$\sum y$  : Total score of even number items

(Arikunto, 1997:69)

The criteria of reliability are:

0.80 - 1.00 : very high

0.60 – 0.79 : high

0.40 – 0.59 : average

0.20 – 0.39 : low

0.00 – 0.19 : very low

Then this research will use “Spearman brown’s prophecy formula” to know the coefficient correlation of whole items.

The formula is as follows:

$$rk = \frac{2r1}{1 + r1}$$

Where:

$rk$  : the reliability of the test

$r1$  : the reliability of half of the test

(Hatch and Farhady, 1982:246)

### **3.7.3. Level of Difficulty**

Difficulty level related to how easy or difficult the item is from point of view of the students who take the test. This was important since test items, which are too easy, tell us nothing about differences is discarded. To see the level of difficulty, this research will use the following formula:

$$LD = \frac{U + L}{N}$$

Where:

LD : level of difficulty

U : the number of students who answer correctly

N : the total number of students following the test

The criteria are:

<0.30 = difficult

0.30-0.70 = average

>0.70 = easy

(Shohamy, 1985; 79)

#### 3.7.4. Discrimination Power

The discrimination power (DP) refers to the extent to which the item differentiates between high and low level students on the test. A good item according to this criterion is one which good students do well on and bad students fail.

To know the discrimination power of the test, the writer used the following formula:

$$DP = \frac{U - L}{\frac{1}{2} N}$$

Where:

DP : discrimination power

U : the proportion of upper group students

L : the proportion of lower group students

N : total number of students

The criteria are:

DP: 0.00-0.19 : poor

DP: 0.20-0.39 : Satisfactory

DP: 0.40-0.69 : Good

DP: 0.70-1.00 : Excellent

DP : bad items, should be omitted

1. If the value is positive discrimination a large number of more knowledgeable students than poor students got the item in correct. If the value is zero, no discrimination.
2. If the value is negative, means that more low-level students than high level students got the item correct.
3. In general, the higher the discrimination index, the better. In classroom situation most items should be higher than 0.20 indexes.

(Shohamy, 1985:81)

### 3.7.5. Scoring System

In scoring the students result of the test, this research used Arikunto`s formula.

The ideal higher scores of pretest and post tests was calculated by using formula as follows:

$$S = \frac{R}{N} 100$$

Where:

S : the score of the test

R : the total of the right answers

N : the total items

(Arikunto, 1997:212)

### **3.7.6 Data Analysis**

After conducting pretest and posttest, the researcher analyzed the data. It was used to know whether there is significant different increase of the student's mastery.

The researcher examined the students score using the following steps;

1. Scoring the pretest and posttest
2. Tabulating the score of student's vocabulary test results using Repeated measures T-test
3. Drawing conclusion from the tabulated result of the pretest administering, that is statistically analyzed using SPSS (statistical Program for Social Sciences) in order to test whether increase of the students gain is significant or not.

### **3.7.7 Hypothesis Testing**

The hypothesis was used to prove whether the hypothesis proposed in this research was accepted or no.

The hypothesis of this research was "there is a significant difference of the students' vocabulary score between pretest and post test after being taught through Word Association Technique"

The hypothesis was statistically analyzed using Repeated measures T-test that was used to draw the conclusion in significant level of 0.05 ( $P < 0.05$ ) in which the hypothesis is approve if  $\text{Sig} < .$  It means that the probably of error in the hypothesis is only about 5%.